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Memorandum

Date: **March 21, 2012**

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Health Director
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Subject: Restaurant Associated Norovirus Outbreak – Catawba County, 2012

We are submitting the attached memorandum as the final outbreak report to health department officials in North Carolina.

Summary

In January 2012, Catawba County Public Health received reports of gastrointestinal illness associated with the Harbor Inn Seafood Restaurant in Hickory, North Carolina. One hundred sixty-six cases were identified in total. Norovirus was identified as the etiologic agent based on laboratory testing and clinical characteristics. A case control study was performed, which identified salad consumption as the primary exposure associated with illness (OR 18.7, 95% CI: 7.0–50.4). A public health investigation revealed that 8 food handlers had worked while ill. Control measures were implemented in the restaurant based on public health recommendations; no new illness onsets occurred after January 24.

Background

On January 17, 2012, Catawba County Public Health (CCPH) received an anonymous call from a Catawba County resident reporting gastrointestinal illness after visiting the Harbor Inn Seafood Restaurant located in Hickory, North Carolina. By January 19, ten cases of gastrointestinal illness associated with the Harbor Inn Restaurant had been reported to the local health department and a public health investigation was initiated.

Methods

Initial Public Health Response

CCPH conducted on-site inspections and developed a short questionnaire and line list to record case information. Additional staff members were identified to respond to inquiries from the public. The North Carolina Division of Public Health (NCDPH) was notified of the outbreak and dispatched a medical epidemiologist from the Communicable Disease Branch and a Regional Communicable Disease Nurse Consultant to provide onsite assistance. Information about norovirus and investigation updates were published on the CCPH website. Talking points were developed for use with ongoing media interviews and public inquiries. (Appendix A)

Case finding

Passive reporting of cases was enhanced by public notification of the outbreak through media reports. State and local public health officials were notified through the NC Health Alert Network on January 23 and asked to contact CCPH if potential cases were identified.

Clinical Laboratory Investigation

Catawba County Public Health requested stool samples from case-patients. These stool specimens were sent to the North Carolina State Laboratory of Public Health for norovirus PCR.

Environmental Investigation

An Environmental Health officer from CCPH visited the Harbor Inn Restaurant on January 17 after receiving the first reports of illness. Subsequent visits took place throughout the course of the investigation. Environmental Health staff evaluated the temperatures of raw and cooked products, methods of food preparation, and food storage facilities at the restaurant. CCPH staff also interviewed restaurant managers to determine whether any food handlers had been ill during the likely exposure periods. A site visit with environmental health and a medical epidemiologist occurred on January 31 to identify possible vehicles of exposure and observe workflow patterns.

Case Control Study

A case control study was initiated on January 30 to identify the source(s) of exposure. A case was defined as onset of nausea, vomiting or diarrhea (3 or more loose stools in a 24 hour period) within 48 hours after eating at Harbor Inn Seafood Restaurant, with restaurant exposure occurring on or after January 13. Cases were randomly selected from the CCPH line list and divided into two groups; those with exposures during January 13–15th (Group 1) and those with exposures during January 19–20th (Group 2). Controls were randomly selected from names identified through restaurant credit card receipts and matched 1:1 with cases by date of restaurant exposure. (Figure 1)

Cases and controls were interviewed by phone using a detailed questionnaire including items from the Harbor Inn Seafood Restaurant menu (Appendix B). Personal hygiene behaviors (including hand washing practices, restroom hygiene and the sharing of cups and utensils) and known contact with other ill persons were also assessed. All interviewers were trained in the use of the questionnaire before conducting interviews.

Interviews were initiated on February 1st and completed February 3rd. Data were entered into an Epi Info™ 7 database (CDC, Atlanta, Georgia) and analyzed using SAS 9.2 (SAS Institute Inc. Cary, North Carolina). Odds ratios and 95% confidence intervals were calculated using the Cochran–Mantel–Haenszel method.

Results

Description of case patients

One hundred sixty-six cases were identified through passive reporting and through phone calls made during the case-control study. Exposure dates ranged from January 13th through January 29th. Dates of

exposure were clustered on the weekends of January 13–15 and January 19–20 (Figure 1); the tight clustering of illness onset dates was most consistent with 2 point sources of the outbreak (Figure 2).

Fifty-five case-patients were enrolled in the case control study and completed standard interviews. Thirty-four (62%) case-patients were female and 21 (38%) were male. The median age was 61 years with a range of 9 to 79 years. Only one case-patient was less than eighteen years of age. The majority of cases (66%) were 56 years old or older (Table 1). Forty-five (82%) case-patients resided in Catawba County. The remaining case-patients were residents of Alexander, Burke, Caldwell, Lenoir and Lincoln counties.

The most common symptoms experienced by case-patients were nausea (92%), diarrhea (91%), and vomiting (89%). Other symptoms included abdominal cramps (70%), fever (30%) and bloody diarrhea (2%). Eighty-two percent of case-patients reported additional symptoms, including: dizziness, fatigue and headache. The majority of case-patients did not seek medical care (85%); 6 (12%) visited their physician and 2 (4%) went to the emergency room. No patients were hospitalized. Six (11%) case-patients noted that members of their family had been sick prior to their symptoms and 21 (40%) noted that other family members became sick after their own symptoms started.

Clinical laboratory results

Catawba County Public Health distributed stool collection kits to 9 case-patients. Eight (88%) stool specimens were submitted to the North Carolina State Laboratory of Public Health for testing. Four (50%) of these 8 specimens were positive for norovirus by PCR, 3 (38%) were negative and 1 (13%) was indeterminate. One norovirus positive specimen was collected from a restaurant food handler; the remaining positive specimens were from restaurant patrons.

Environmental Investigation results

Food Preparation

The majority of food preparation and cooking occurs by non-wait staff in the kitchen. However, the salad plates, three salad dressings and beverages are prepared for each patron by the wait-staff. The raw ingredients for the salad are prepared each morning and then placed in a salad bar. When a patron orders a salad, a member of the wait staff uses tongs at the salad bar to prepare each individual plate. During the site visit, the tongs were observed to be laying in the lettuce bin on the salad bar. The wait-staff had to touch the lettuce bare-handed in order to lift the tongs up for use.

Three salad dressings are prepared in house. These are made in batches by the wait-staff, stored in pitchers, and then poured into containers on the salad bar when they get low. These are normally used within 1–3 days.

The ice scoop for beverages was observed sitting directly on top of the ice maker. There was no designated tray or bin for storage. The ice scoop did not have a sleeve or protective cuff to prevent hand contact with the ice bin.

Employee illness

Eight staff members were identified who worked January 12–January 20 while experiencing gastrointestinal symptoms.

Case Control Study

We enrolled 55 case-patients and 56 control subjects; 45 cases and 45 control subjects in Group 1 (January 13–15th exposure) and 10 cases and 11 controls in Group 2 (January 19–20th exposure). Control subjects did not differ significantly from cases on sex, age, county of residence, or type of meal (dinner vs. lunch or dine-in vs. take-out) (Table 1). None of the personal hygiene behaviors assessed were significantly associated with illness.

Fifty-six food and beverage items were assessed. Salad was the only exposure significantly associated with illness, with an odds ratio of 18.7 (95% CI: 7.0–50.4.) When stratified by date grouping, the association was strongest for Group 1 with an odds ratio of 27.3 (95% CI: 8.5–87.7). Although exposure to salads was also more common among case-patients than control subjects in Group 2 (50% vs. 18%), this association was not statistically significant with an odds ratio of 4.5 (95% CI: 0.6–32.3). (Table 2)

Conclusions

- One hundred and sixty six individuals reported becoming ill with gastrointestinal symptoms after eating at the Harbor Inn Seafood Restaurant in Hickory, North Carolina between January 13th and January 29th, 2012.

- Laboratory testing and clinical characteristics of illness were consistent with norovirus infection.

- Salad was significantly associated with illness among patrons who ate at the restaurant during January 13–15th. Cases were 27 times more likely to eat salad than controls.

- Food handlers working while ill and bare-hand contact with uncooked foods during salad preparation might have facilitated contamination of salads.

- No single exposure was significantly associated with illness among patrons who ate at the restaurant during January 19–20th, suggesting that norovirus contamination may have been widespread at that point or that there was insufficient power to detect a difference.

Limitations

It is likely that not all cases associated with this outbreak were reported to public health, so the case count presented here may underrepresent the true magnitude of the outbreak. Conversely, some cases attributed to this outbreak may have been the result of other community exposures since norovirus was widely circulating in North Carolina during the outbreak period.

Laboratory evidence of norovirus was only found in 4/8 stool samples. It is possible that another pathogen played a role in this outbreak. However, the incubation period, symptoms, and communicability apparent during this outbreak are most consistent with norovirus. (1)

No trace back of food items used in salad preparation was performed. Although contamination by ill food handlers is more likely, it is possible that contamination of the salad ingredients occurred prior to their arrival in the restaurant.

Recommendations

The following recommendations were made to restaurant management during the investigation:

1. All ill staff should be excluded from work until 48 hours after the resolution of symptoms.
2. Restaurant staff and management should be educated on good hygiene practices, including proper hand washing, glove use, and staying home while ill.
3. Disinfection of all surfaces should be conducted nightly, using 250-500ppb bleach solution.
4. All items that cannot be disinfected properly should be discarded.
5. Bare hand contact should not occur with ready to eat foods.
6. Utensils and tongs should be stored in designated containers separate from food.

(Appendix C)

CCPH took the following actions to further protect the Catawba County community:

1. Norovirus guidelines were distributed to local schools, daycares and long term care facilities. The guidelines provided an overview of norovirus symptoms, suggestions for reducing transmission, and reinforced the importance of exclusionary policies and cohorting.
2. Area restaurants were given information about norovirus, as well as a reminder to follow best practice guidelines to protect food products from contamination.

Discussion

CCPH and NCDPH worked collaboratively on this outbreak. Excellent communication between public health and restaurant management facilitated the rapid identification of a source, and allowed CCPH to implement protective health measures immediately. This outbreak serves as a model for local and state cooperation, stakeholder communication, and high quality, efficient investigative technique.

North Carolina currently follows a food code derived from past FDA Food Codes and adapted to account for North Carolina's own initiatives. This year, North Carolina will adopt the 2009 FDA Food Code, customized to reflect the North Carolina grading and enforcement system. (2) This will be the first time since 1976 that a full FDA food code has been adopted in North Carolina. One notable change related to food safety is increased vigilance when handling ready to eat foods. Bare hand contact is prohibited and utensils are to be stored in a clean location with the handles away from food. (2)

The restaurant associated norovirus outbreak in Catawba County was associated with consumption of salads that were likely contaminated by one or more ill food handlers. This scenario illustrates the importance of adopting the 2009 FDA Food Code, which prohibits bare hand contact with ready-to-eat foods and storage of utensils in food products. The purpose of this increased regulation is to help prevent food contamination and subsequent illness.

This outbreak also highlights the importance of good hand hygiene among food handlers, exclusionary work policies for ill workers, and compliance with routine disinfection procedures.

Works Cited

1. CDC, Updated Norovirus Outbreak Management and Disease Prevention Guidelines. MMWR 2011;60(RR03);1-15.
2. FDA, FDA 2009 Food Code. http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode2009/default.htm

Acknowledgements
We would like to acknowledge the following groups for their assistance during this investigation: Catawba County Public Health, North Carolina State Laboratory of Public Health and the North Carolina Division of Public Health.

Tables and Figures

Figure 1. Control Selection Process

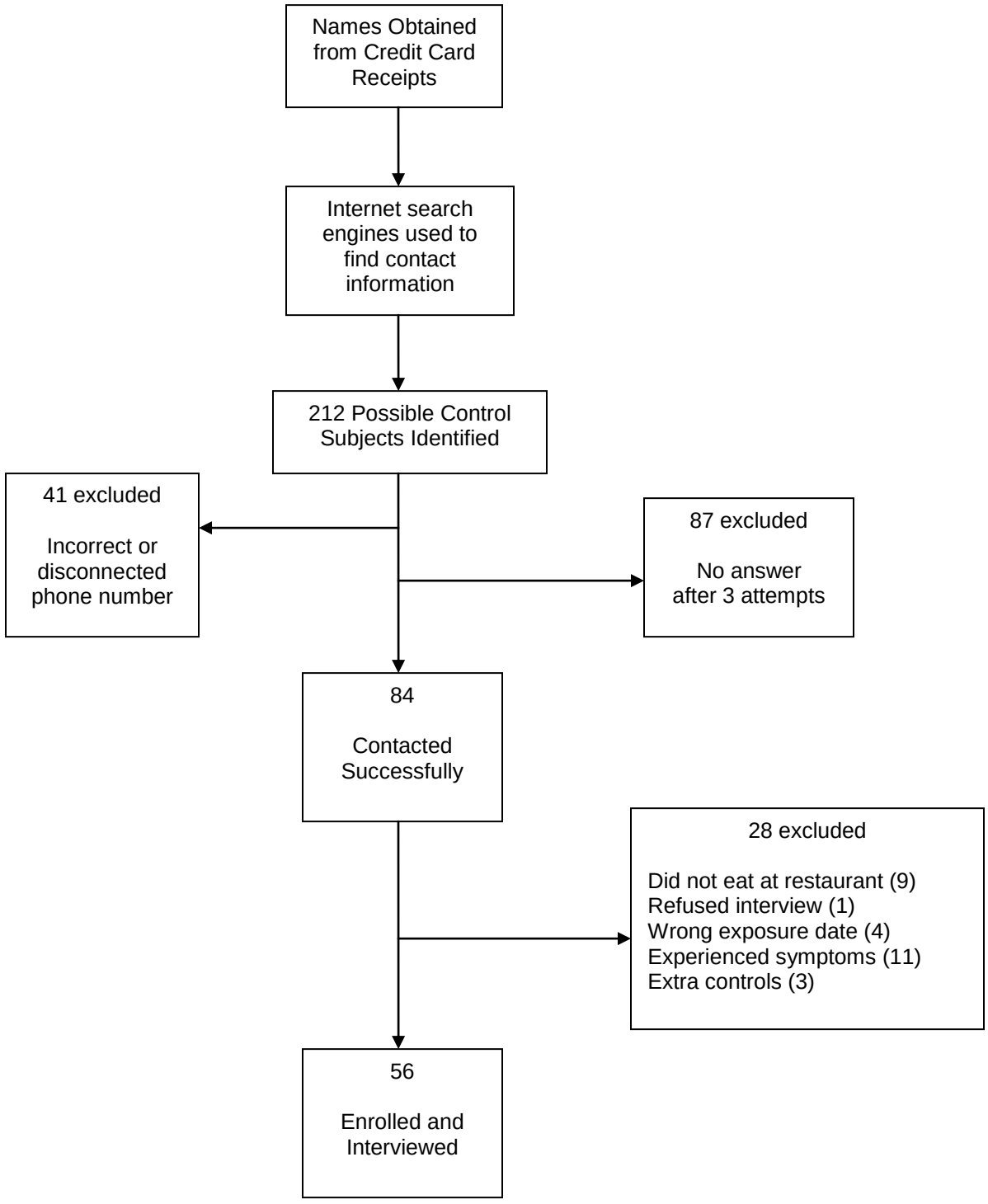

Figure 2. Number of Cases by Date of Restaurant Visit.

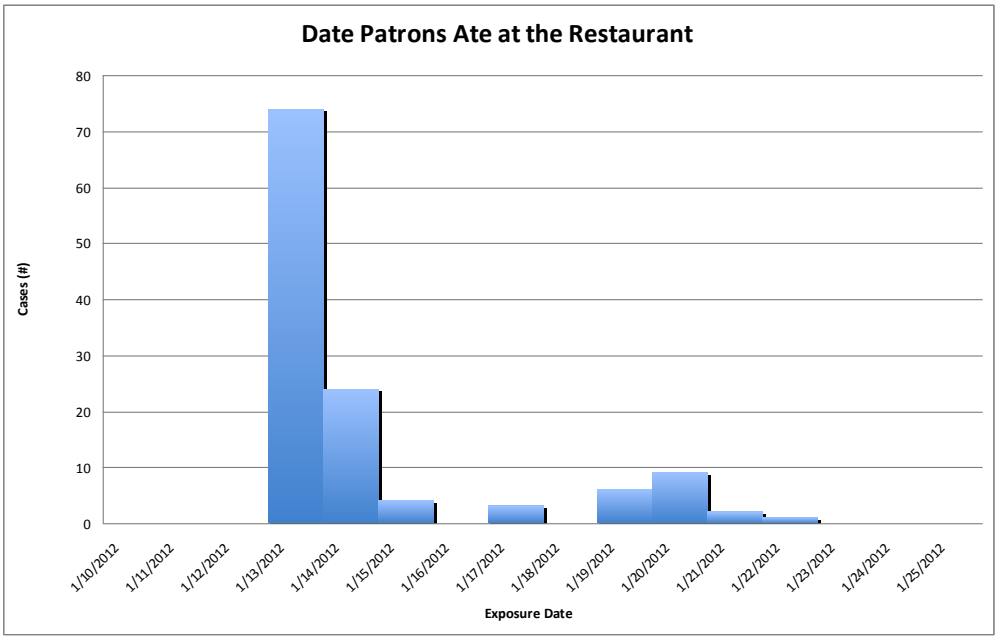

Figure 3. Number of Cases by Date of Symptom Onset

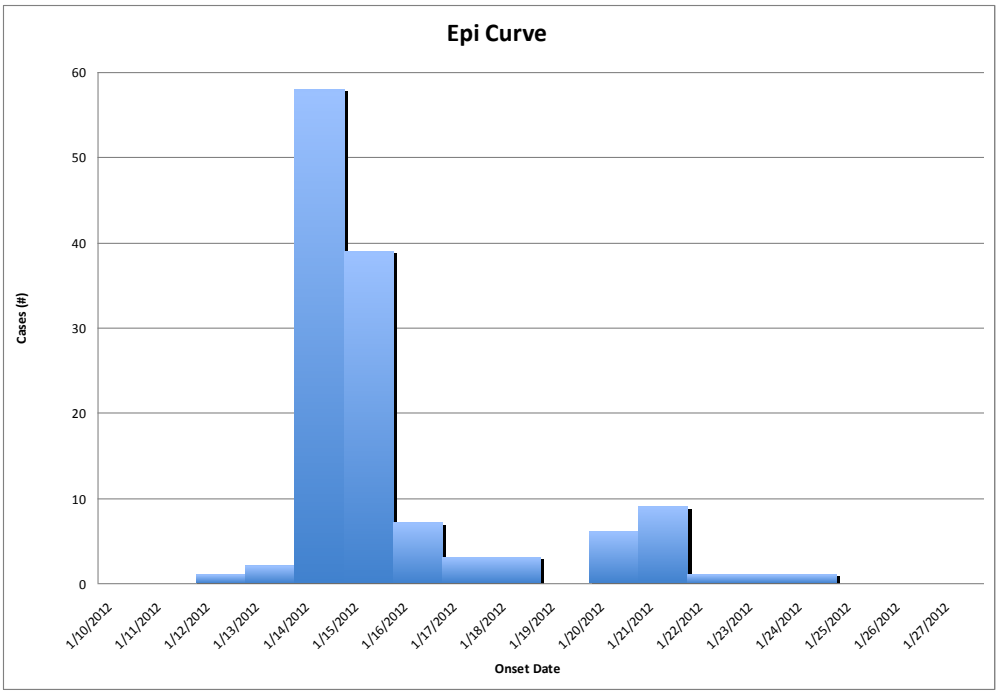

Table 1. Demographics of Case-Patients and Control Subjects, Stratified by Date Grouping

	Group 1					Group 2					Total			
	Cases (n=45)		Controls (n=45)			Cases (n=10)		Controls (n=11)			Cases (n=55)		Controls (n=56)	
	n	(%)	n	(%)		n	(%)	n	(%)		n	(%)	n	(%)
Female sex[1]	29	(64%)	16	(36%)		5	(50%)	4	(36%)		34	(62%)	20	(36%)
Median age (range)[2]	62	(31–79)	62	(8–85)		56	(9–75)	59	(56–71)		61	(9–79)	61	(8–85)

[1,2] Sex missing for 1 case-patient; age missing for 3 control-subjects

Table 2. Select Food and Beverage Results
(The five exposures that accounted for the highest percentage of cases were chosen for each group.)

	Cases		Controls			
Food	**n**	**%**	**n**	**%**	**OR**	**95% CI**
Total						
Hushpuppies	53	95	54	96	0.7	0.1 - 4.1
Ice in drink	44	79	40	71	1.5	0.6 - 3.4
Salads	41	73	7	13	18.7	7.0 - 50.4
Baked potatoes	37	67	32	57	1.3	0.6 - 2.8
Water	31	55	26	46	1.3	0.6 - 2.8
Group 1						
Hushpuppies	42	93	43	96	0.7	0.1 - 4.1
Ice in drink	37	82	31	69	2.1	0.8 - 5.6
Salads	35	78	5	11	27.3	8.5 - 87.7
Baked potatoes	32	71	25	58	1.8	0.7 - 4.3
Water	24	53	20	47	1.3	0.6 - 3.0
Group 2						
Hushpuppies	10	100	11	100	--	--
Ice in drink	6	60	9	82	0.3	0.0 - 2.4
Salads	5	50	2	18	4.5	0.6 - 32.3
Baked potatoes	5	50	7	70	0.4	0.1 - 2.7
Water	7	70	6	55	1.9	0.3 - 11.8

Appendix A: Catawba County Talking Points

Catawba County Public Health
Norovirus Outbreak Associated with Harbor Inn Seafood
Talking Points

What do we know already about this outbreak?
Many individuals became ill with vomiting and diarrhea after eating at the Harbor Inn Seafood restaurant in Catawba County. Most ill individuals visited the restaurant between January 13th and January 21st. Laboratory tests have identified norovirus as the cause of the illness.

What are we doing about this outbreak?
Catawba County Public Health has already been working closely with the Harbor Inn restaurant to help prevent and control the further spread of the virus. The Harbor Inn has been using disinfectants known to kill norovirus. The next step is to perform a study to try and identify the source of the illness.

Why are we conducting a case control study for this outbreak?
Catawba County Public Health has identified 131 individuals who became ill after eating at Harbor Inn Seafood. When this many individuals become ill, it is the responsibility of public health to conduct a thorough investigation and attempt to identify the vehicle responsible.

Were any wait staff sick?
Yes, but over hundred more individuals were also sick, which is why we are further looking into the cause in this norovirus case.

What type of study is the Health Department doing?
Catawba County Public Health is performing a case control study, which compares people who became ill ("cases") and people who did not become ill ("controls.") We interview both groups with the same set of questions, and then look for differences to see if there is a particular food item that ill individuals ate more often than healthy individuals. This can help us identify the source.

Will the case control study identify a particular staff member as the source?
No, the purpose of the case control study is not to identify a specific person – staff or patron – who contributed to the outbreak. The purpose is to identify a food item or activity that may have been contaminated with norovirus. By identifying a specific food item, we can better prevent norovirus outbreaks in the future.

If norovirus is such a common cause of outbreaks, why are you doing this study at the Harbor Inn? North Carolina has already had many norovirus outbreaks this winter. Most of these outbreaks have been in assisted living facilities, nursing homes, or daycares. We know how norovirus is spread in these environments and how to control and prevent it. This outbreak is

associated with a restaurant and caused more than one hundred illnesses; this makes us concerned that a particular food product could have contributed to the outbreak. If we can identify that food product, then we can use that information to help prevent future outbreaks.

How soon will we know what caused the outbreak?
A case control study can take several weeks, as we identify people to interview, conduct the interviews, gather our data, and then analyze the data. We will keep the media and public informed of our progress. It is also important to keep in mind that we may not be able to identify a specific source.

What is norovirus?
Norovirus is a common cause of gastrointestinal illness. It causes vomiting, watery diarrhea and abdominal cramps. Norovirus is found in the vomit and stool of infected people. It is highly contagious and is transmitted either by direct person-to-person spread or by touching, eating or drinking something that has been contaminated with the virus.

Individuals usually become ill within 12 to 48 hours of coming in contact with the virus. Symptoms usually last 1-3 days. Some individuals may require intravenous fluids to prevent dehydration during their illness. Most individuals make a complete recovery with no long-term health effects. Washing your hands carefully with soap and water is the best way to avoid getting sick. Alcohol-based hand sanitizers are not as effective against norovirus.

Key Messages:
1. Catawba County Public Health and the North Carolina Division of Public Health are working with the Harbor Inn Seafood restaurant to prevent and control the spread of norovirus.
2. Catawba County Public Health and the North Carolina Division of Public Health are working with the Harbor Inn Seafood restaurant to find the cause of the outbreak by conducting a case control study.
3. Our case control study may not be able to identify a food source.
4. The results may not be available for several weeks.
5. If you become ill after eating at the Harbor Inn Seafood restaurant between January 13 and 21, please contact the Catawba County Public Health and seek care with your medical provider.

Further Resources and Information about Norovirus:

CDC Norovirus Homepage:
http://www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus.htm

North Carolina Division of Public Health Norovirus Homepage:
http://epi.publichealth.nc.gov/cd/diseases/norovirus.html

North Carolina Division of Public Health Norovirus Outbreaks:
http://epi.publichealth.nc.gov/cd/norovirus/outbreaks.html

Appendix B: Questionnaire

Catawba County Public Health
Foodborne Illness Investigation Packet

Instructions:

This questionnaire is to be administered to patrons of the Harbor Inn Seafood Restaurant as part of a case-control study. It is intended to identify and interview both case-patients and controls. We will be taking a sample of case-patients from two date ranges to interview with our questionnaire.

40 case-patients from January 13 – January 15th
10 case-patients from January 19 – 20th

We will attempt to enroll one control for each case-patient, and will match them by restaurant visit date.

Each packet has the name and phone number of one patron identified from credit card receipts, health department reports, or well meal companions. At least three attempts should be made to interview each patron. If the patrons cannot be contacted, please contact Stephanie Griese for additional names and phone numbers. The names of other persons who ate at the Harbor Inn Seafood Restaurant with the cardholder on the same date should be recorded on the last page. These persons should be interviewed during the same call if available; if they are willing to be interviewed but not available, a specific callback time should be determined.

Each case-patient and control will have his or her own ID number. Please circle "Case" or "Control" on the top of each page, and write in the case ID number. Thank you for your participation! Please contact me with any questions.

Sincerely,
Stephanie Griese, MD, MPH
Epidemic Intelligence Service Officer
North Carolina Division of Public Health
XXX-XXX-XXXX (mobile)
XXX-XXX-XXXX (office)

Case Definitions

Case

A patron or staff member reporting acute onset of nausea, vomiting, and/or diarrhea (3 or more loose stools within a 24 hour period) within 48 hours after visiting the Harbor Inn Seafood Restaurant during the time period 1/13/2012 through 1/21/2012.

Control

A person who ate at the Harbor Inn Seafood Restaurant between 1/13/2012 and 1/21/2012 and did not experience any symptoms of gastrointestinal illness during the 2-10 days afterwards.

Interview Key:

Y = Yes

N = No

DK = Don't Know

Catawba County Norovirus Outbreak: Call Log

Case patient ID:_____
If control, matched case-patient ID: _____
Meal date: ___ / ___ / _____

Patron name: _____
Phone Number: _____

1st Attempt:
Date/Time: _____
Result: □ Interview completed
□ Refused
□ No answer
□ Call back (date/time): _____

2nd Attempt:
Date/Time: _____
Result: □ Interview completed
□ Refused
□ No answer
□ Call back (date/time): _____

3rd Attempt:
Date/Time: _____
Result: □ Interview completed
□ Refused
□ No answer
□ Call back (date/time): _____

DISPOSITION:
□ **Interview completed**
□ **Wrong number**
□ **Refused**
□ **No answer**
□ **Did not visit restaurant**
□ **Controls only: Became ill within 48 hours of visiting the restaurant**
□ **Controls only: Became ill more than 48 hours after visiting the restaurant**
□ **Other:** _____

Catawba County Public Health
Foodborne Illness Investigation Form

Hello, my name is _____ and I am calling on behalf of (Catawba County Public Health or North Carolina Division of Public Health). I'm contacting you because we're investigating recent illnesses in people who have eaten at Harbor Inn Seafood. In order to determine what may have made people sick, we need to gather information from individuals who were sick and individuals who were not sick. All information will be kept confidential and will only be used to help with this investigation. Is this a good time and would you be willing to help us by responding to questions about illness and food consumption? It takes about 15 minutes to go over these questions.

If yes, continue to Section I.
If no, thank them for their time and end the call.

I. General Information

Date of Interview_____ Interviewer _____

Did you visit or eat food from Harbor Inn Seafood between January 13 – 21, 2012? Yes No
If yes, what date: _____
If no, thank them for their time and end the call.

Did you eat (*circle one):* Lunch Dinner Other: _____
What time did you eat? _____ AM/ PM *(circle)*
Did you dine in or take out *(circle one*)? In Restaurant Take Out
Name_____
County of Residence:_____
Best contact number_____
Date of birth_____ Sex (circle): Male Female

II. Case Ascertainment Questions

1. **Have you been sick any time since Friday, January 13th? Y N**
(*If No, skip to section III for food item information***)**

2. **Which of the following symptoms did you have:** (*circle all that apply*) (diarrhea is 3 or more episodes of loose stools in a 24-hour period)

Nausea	Y	N	DK
Vomiting	Y	N	DK
Diarrhea	Y	N	DK
Bloody diarrhea	Y	N	DK
Abdominal cramps	Y	N	DK

Fever Y N DK
Other: Y N DK_____

What symptom did you experience first? (Choose one.) Vomiting Diarrhea Neither
Illness onset date_____ Illness onset time _____AM/PM (*provide approximate time*)

3. **Are you still experiencing vomiting or diarrhea?** Y N (*circle*) Vomiting Diarrhea Both
Last date of vomiting_____ Last time of vomiting_____AM/PM
Last date of diarrhea _____ Last time of diarrhea_____AM/PM

4. **Did you see a doctor for this illness?** (*Circle all that apply*)
No medical care Physician visit Emergency Room Hospital
Other_____
Were you admitted to the hospital for more than 24 hours? Y N
Doctor/Hospital/Clinic
Name_____

5. **Did you get any stool or blood testing during your illness?** Y N (*If yes, circle*) Stool Blood
Do you know you results (*if yes, please explain*)_____

6. **Do you have any existing medical problems, such as diabetes, cancer, or respiratory disease**?
Y N DK
(*If yes, please describe*)_____

7. **Do you know anyone else who was sick with similar symptoms during the week *before* your illness?**
Y N DK
(*Please explain and identify these persons, get contact information and date of onset of symptoms*)
_____
_____

8. **Do you know anyone else who was sick with similar symptoms during the week *after* your illness?**
Y N DK
(*Please explain and identify these persons, get contact information and date of onset of symptoms*)
_____
_____

III. Food and Beverages

In order for us to determine what may have made people sick, and how we can help prevent future outbreaks like this in the future, I would like to ask you some questions about what you ate and drank. I will ask you a series of items from the menu at the restaurant, and I'd like you to tell me whether you ate or tasted each item, either from your plate or someone else's plate at your table.

1. **Did you eat any appetizers?** Y N DK
If yes, please go through the following and place a check in the appropriate box:

Appetizers	**Yes**	**No**	**Don't Know**
Clam Chowder			
Oyster Stew			
Onion Rings			
Shrimp Cocktail			
Oyster Cocktail			
Cheese Sticks			
Fried Mushrooms			
Crab Legs			

2. **Did you eat any salads?** Y N DK
If yes, please go through the following and place a check in the appropriate box:

Salads	**Yes**	**No**	**Don't Know**
House Salad			
Tuna Salad Cold Plate			
Shrimp Salad Cold Plate			
Cottage Cheese and Fruit			

Please circle the dressing you used on your salad:

Thousand Island Blue Cheese Ranch Other:_____

3. **Now I'm going to ask you about the seafood, steak and chicken that you may have eaten.**
(Go through each item on the list for all patrons and check the appropriate box.)

Seafood	**Yes**	**No**	**Don't Know**
Flounder			
Shrimp			
Catfish			
Perch			
Oysters			

Whiting			
Perch			
Crab			
Alaskan White Fish			
Clams			
Scallops			
Cod			
Tilapia			
Salmon			
Tuna			
Red Snapper			
Swordfish			

Steak	**Yes**	**No**	**Don't Know**
Ribeye			
New York Strip Steak			
Sirloin			
Ground Sirloin			
Hamburger			
Sliced Steak			

Chicken	**Yes**	**No**	**Don't Know**
Grilled Chicken			
Baked Chicken			
Chicken Fingers			

Condiments	**Yes**	**No**	**Don't Know**
Ketchup			
Cocktail Sauce			
Tartar Sauce			
Hot Sauce			
Lettuce (on a sandwich or with your meal)			
Tomato (on a sandwich or with your meal)			
Other: _____			

4. **Did you eat any of the following side items?**
Please go through the following and place a check in the appropriate box:

Side Items	**Yes**	**No**	**Don't Know**
Coleslaw			
Hush Puppies			
Baked Potato			
French Fries			

Cottage Cheese			
Bread			

2. Please indicate which beverages you drank during your visit to Harbor Inn Seafood:
(Go through each item on the list for all patrons and check the appropriate box.)

Beverage	**Yes**	**No**	**Don't Know**
Did you have ice in your beverage?			
Iced Tea			
Soft Drink			
Coffee			
Milk			
Water			

Was there a food or beverage that you ate or drank that I did not ask you about? Y N DK

*If yes, please describe*_____

Was there anything unusual about any of the foods or beverages? Y N DK

*If yes, please describe*_____

_____

_____

_____

IV. Personal Hygiene and Infection Control

1. **Did you wash your hands before eating?** Y N DK
If yes, how did you wash your hands? (*Circle)* Soap and water Hand sanitizer

2. **Did you share your cup or utensils with anyone else?** Y N DK

3. **Did you visit the restroom while dining at the Harbor Inn?** Y N DK
If yes, did you wash your hands after using the restroom? Y N DK
If yes, how did you wash your hands? *(Circle)* Soap and water Hand sanitizer

V. Other Information

1. **Is there anything else you would like to tell me about your meal?** Y N DK

If yes, please describe:_____
_____
_____
_____
_____
_____
_____

VI . Closing

"That's the end of the questionnaire. Were there other members of your household or other people who ate at Harbor Inn Seafood restaurant with you on that day?" Yes / No

If "Yes", record names on the last page and interview if available
If "No", continue

"Do you have any concerns or information you think could be helpful for this investigation?"

If so, please record below. If not:

"Thank you very much for your time. If you think of other questions about this outbreak or questionnaire, please call the Catawba County Public Health at 828-695-5800".

Additional questions / comments:

_____
_____
_____
_____
_____
_____

Other Meal Companions

List others who ate with patron at Harbor Inn Seafood restaurant on the same date:

Name	Phone	<18 years old?	Sick after meal?	Best time to call

Thank you for your time! This information will be very helpful for us in our investigation.

Appendix C: Catawba County Public Health Recommendations

Catawba County Public Health Recommendations
Harbor Inn Seafood Restaurant
Provided Verbally: January 19—26, 2012

1) Install two extra hand sinks - one by the salad prep table and one in the waitress area.

2) All employees should wear gloves, including cooks and wait staff. Encourage the wait staff to wash hands in between food preparation for each customer. Consider wearing gloves when busing tables.

3) Use mixed bleach solution at the end of each night on all surfaces. The chlorine bleach/water solution should remain on the surface for ten minutes and then rinsed with clean water.
    a. For stainless steel, food/mouth contact items: 1 tablespoon of bleach in 1 gallon of water (1:256 or 200 ppm)
    b. For non-porous surfaces such as tile floors, counter-tops, sinks, etc.: a third (1/3) cup of bleach in 1 gallon of water (1:50 or 1000 ppm).
    c. For porous surfaces such as wooden floors: one and two-thirds (1 2/3) cups of bleach in 1 gallon of water (1:10 or 5000 ppm)

4) Put tongs in containers at the salad prep station so that they will not slide down into the lettuce and salad fixings or be placed directly in it where the hand contact end would touch those items.

5) Have wait staff wear gloves when cutting lemons and place them in a container. Remove lemons with tongs.

6) Limit bare hand contact "on ready to eat foods."

7) Consider changing the fountain drink machine levers to push buttons, to limit possibility of contamination if cups are refilled. Recommend using a new cup with each refill.

8) Create a chart where employees record ill symptoms in themselves or their family prior to the start of the work shift.

9) Have wait staff wear gloves when they wrap silverware.

10) As always WASH HANDS.